**Types of substances**

QUESTION: **Justify each of the properties of the following substances**

|  |  |  |  |
| --- | --- | --- | --- |
| **electrical conductivity** | **melting & boiling points** | **solubility** | **malleability** |
| **MgO** | **ice** | **Mg** | **Mg** |
| **diamond** | **SiO2** | **SiO2** | **Zn** |
| **graphite or graphene**  (Graphene is a new 2-dimensional material made of carbon atoms. Graphene can be described as a ‘one-atom-thick’ layer of graphite) | **Br2** | **Br2** | **ZnCl2** |
| **copper** | **NaCl** | **NaCl** | **Ag** |
| **sulfur** | **MgCl2** | **MgCl2** |  |
| **MgCl2** | **diamond** | **Zn** | **ductility** |
| **Pb** | **MgO** | **ZnCl2** | **copper** |
| **CuCl2** | **SCl2** | **LiCl** | **hardness** |
| **lithium chloride** | **LiCl** | **potassium chloride** | **diamond** |
| **Pb** | **S8** | **I2** | **graphite** |
| **graphite** | **I2** | **KI** |  |
| **sodium chloride** | **KI** |  |  |
| copper | **Cl2** |  |  |
|  | **graphite or graphene**  (Graphene is a new 2-dimensional material made of carbon atoms. Graphene can be described as a ‘one-atom-thick’ layer of graphite) |  |  |

**ADDITIONAL NCEA EXAMINATION QUESTIONS**

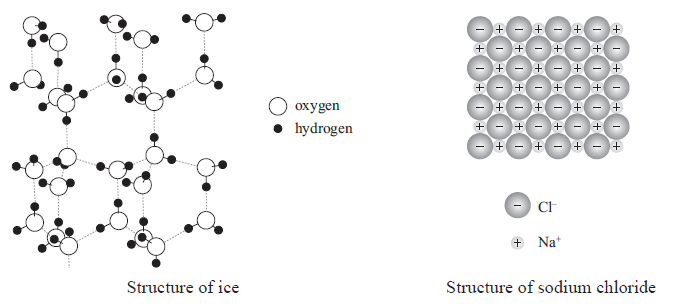
**1)** Use your knowledge of structure and bonding to explain the dissolving process of sodium chloride in water. Support your answer with an annotated

(labelled) diagram.

**2)** Silicon dioxide has a melting point of 1770°C.

Explain why silicon dioxide has a high melting point by referring to the particles and the forces between the particles in the solid.

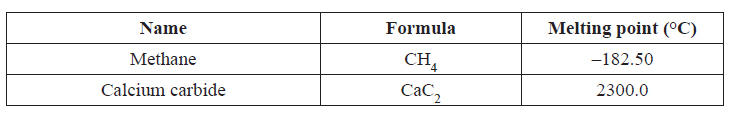
**3)** The diagrams below show structural representations of the two solids ice, H2O, and sodium chloride, NaCl.

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Ice melts at 0°C and sodium chloride melts at 801°C.

On **each** diagram above, circle ONE of the forces of attraction which must be overcome for the substance to melt. Give a reason for your choice.

**4)** Discuss the reasons why the following two carbon-containing compounds (methane and calcium carbide) have different melting points. The melting points are given in the table below.



Your answer should include:

• the type of particle found in each compound

• the attractive forces found in each compound

### • the strength of these attractive forces.

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